

**What is claimed:**

1. A method of assessing a candidate molecule for the treatment of a CNS disorder, said method comprising:

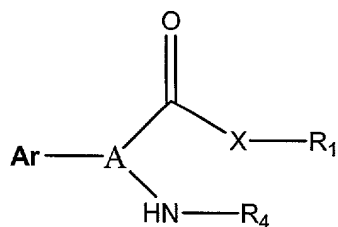
- a) providing a test DAO-inhibitor or DDO-inhibitor compound; and
- b) administering said compound to an animal model of schizophrenia or bipolar disorder,

wherein a determination that said compound ameliorates a characteristic representative of a CNS disorder in said animal model indicates that said compound is a candidate molecule for the treatment of a CNS disorder; and alternatively one or more of the following:

- i.) wherein said compound selectively bind to said polypeptide;
- ii.) wherein said compound selectively inhibits the activity of said polypeptide;
- iii.) wherein said compound is capable of inhibiting the oxidation or degradation of a D-amino acid selected from the group consisting of D-Met, D-Pro, D-Phe, D-Tyr, D-Ile, D-Leu, D-Ala, D-Val, D-Ser, D-Arg, D-His, D-norleucine, D-Trp, D-Ornithine, cis-4-hydroxy-D-proline, D-Thr, D-Trp-methyl ester, N-acetyl-D-Ala, D-Lys, D-Asp, D-Glu, D-Asn, D-Gln, D-Asp-dimethyl-ester and N-methyl-D-Asp; and further alternatively wherein the compound of claim iii is capable of inhibiting the oxidation or degradation of D-serine.

2. The method of claim 1, wherein said test compound is selected from the group consisting of:

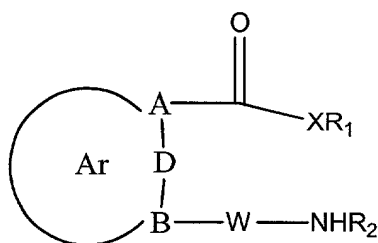
- (1) a compound represented by the structure comprising:



or a pharmaceutically acceptable salt thereof, wherein:

- 6 a) A is alkyl such as methyl, ethyl, propyl or butyl; branched chain alkyl such as  
 7 isobutyl, isopropyl, isopentyl or cycloalkyl such as cyclopropyl, cyclopentyl or  
 8 cyclohexyl. Such groups may themselves be substituted with C<sub>1</sub>-C<sub>6</sub> alkyl, halo,  
 9 hydroxyl or amino;
- 10 b) X is O or N;
- 11 c) Ar is an aromatic mono-, bi- or tricyclic fused heterocyclic ring, wherein the ring is  
 12 either unsubstituted or substituted in one to five position(s) with hydrogen, halogen,  
 13 hydroxyl, -CN, COR<sub>2</sub>, --CONR<sub>2</sub> R<sub>3</sub>, --S(O)<sub>n</sub> R<sub>2</sub>, --OPO(OR<sub>2</sub>)OR<sub>3</sub>, --PO(OR<sub>3</sub>)R<sub>3</sub>, --  
 14 OC(O)NR<sub>2</sub> R<sub>3</sub>, --COOR<sub>2</sub>, --CONR<sub>2</sub> R<sub>3</sub>, --SO<sub>3</sub>H, --NR<sub>2</sub> R<sub>3</sub>, --NR<sub>2</sub> COR<sub>3</sub>, --NR<sub>3</sub>  
 15 COOR<sub>3</sub>, --SO<sub>2</sub> NR<sub>2</sub> R<sub>3</sub>, --N(R<sub>2</sub>)SO<sub>2</sub> R<sub>3</sub>, --NR<sub>2</sub> CONR<sub>2</sub> R<sub>2</sub>, --SO<sub>2</sub> NHCOR<sub>2</sub>, --  
 16 CONHSO<sub>2</sub> R<sub>2</sub>, --SO<sub>2</sub> NHCN, --OR<sub>1</sub>, C<sub>1</sub>-C<sub>6</sub> straight or branched chain alkyl or  
 17 alkenyl, or C<sub>1</sub>-C<sub>6</sub> branched or straight chain alkyl or alkenyl which is substituted  
 18 with one or more, halogen, hydroxyl, amino, carboxy, carboxamide, nitrile, nitro,  
 19 alkoxy, trifluoromethyl, sulfur, sulfonate, phosphonate, phosphate, Ar<sup>1</sup>, N<sub>3</sub> or a  
 20 combination thereof and wherein the heterocyclic ring contains 1-6 heteroatom(s)  
 21 selected from the group consisting of O, N, S, and a combination thereof;
- 22 d) R<sub>4</sub> is H, alkyl, Ar<sup>1</sup>, O, substituted alkyl;
- 23 e) R<sup>1</sup> is (C<sub>1</sub> - C<sub>6</sub>) alkyl, Ar<sup>1</sup>, (C<sub>1</sub> - C<sub>4</sub>) alkoxycarbonylmethyl, substituted alkyl;
- 24 f) R<sub>2</sub> and R<sub>3</sub> are each, independently, hydrogen, C<sub>1</sub>-C<sub>6</sub> straight or branched chain alkyl  
 25 or alkenyl, or C<sub>1</sub>-C<sub>6</sub> branched or straight chain alkyl or alkenyl which is substituted  
 26 with one or more, halogen, hydroxyl, amino, carboxy, carboxamide, nitrile, nitro,  
 27 alkoxy, trifluoromethyl, sulfur, sulfonate, phosphonate, phosphate, Ar<sup>1</sup>, or N<sub>3</sub>; and
- 28 g) Ar<sup>1</sup> is a mono-, bi- or tricyclic, carbo- or heterocyclic ring, wherein the ring is either  
 29 unsubstituted or substituted in one to three position(s) with halo, hydroxyl, nitro,  
 30 trifluoromethyl, C<sub>1</sub> - C<sub>6</sub> straight or branched chain alkyl or alkenyl, C<sub>1</sub>-C<sub>4</sub> alkoxy, C<sub>1</sub>  
 31 -C<sub>4</sub> alkenyloxy, phenoxy, benzyloxy, amino, or a combination thereof; wherein the  
 32 individual ring sizes are 3-7 members; and wherein the heterocyclic ring contains 1-  
 33 6 heteroatom(s) selected from the group consisting of O, N, S, and a combination  
 34 thereof;
- 35

36 (2) a compound represented by the structure comprising:

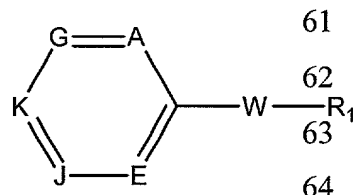


37  
38 wherein:

- 39 a) A and B consist of C or N and D may contain 0-2 members consisting of C or N;  
 40 b) W is C<sub>1</sub>-C<sub>4</sub> alkyl such as (CH<sub>2</sub>)<sub>n</sub>, branched chain alkyl;  
 41 c) n is 0-4. Further, when n = 0 it is assumed that -NHR<sub>2</sub> is covalently bound to B;  
 42 d) X is O or N;  
 43 e) R<sub>2</sub> is H, alkyl, Ar<sup>1</sup>, or O substituted alkyl;  
 44 f) R<sup>1</sup> is (C<sub>1</sub> - C<sub>6</sub>) alkyl, Ar<sup>1</sup>, (C<sub>1</sub> - C<sub>4</sub>) alkoxycarbonylmethyl, or substituted alkyl;  
 45 g) Ar is an aromatic mono-, bi- or tricyclic fused heterocyclic ring, wherein the ring is  
 46 either unsubstituted or substituted in one to six position(s) with halo, hydroxyl,  
 47 nitro, trifluoromethyl, C<sub>1</sub> -C<sub>6</sub> straight or branched chain alkyl or alkenyl, C<sub>1</sub>-C<sub>4</sub>  
 48 alkoxy, C<sub>1</sub> -C<sub>4</sub> alkenyloxy, phenoxy, benzyloxy, amino, C<sub>3</sub>-C<sub>6</sub> cycloalkyl or a  
 49 combination thereof; wherein the individual ring sizes are 5-6 members; and  
 50 wherein the heterocyclic ring contains 1-6 heteroatom(s) selected from the group  
 51 consisting of O, N, S, and a combination thereof; and  
 52 h) Ar<sup>1</sup> is a mono-, bi- or tricyclic, carbo- or heterocyclic ring, wherein the ring is either  
 53 unsubstituted or substituted in one to three position(s) with halo, hydroxyl, nitro,  
 54 trifluoromethyl, C<sub>1</sub> -C<sub>6</sub> straight or branched chain alkyl or alkenyl, C<sub>1</sub>-C<sub>4</sub> alkoxy, C<sub>1</sub>  
 55 -C<sub>4</sub> alkenyloxy, phenoxy, benzyloxy, amino, or a combination thereof; wherein the  
 56 individual ring sizes are 3-7 members; and wherein the heterocyclic ring contains 1-  
 57 6 heteroatom(s) selected from the group consisting of O, N, S, and a combination  
 58 thereof; and  
 59

59 (3) a compound represented by the structure comprising:

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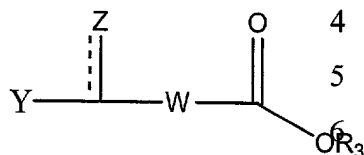


65 wherein:

- 66 a) A, G, K, J, E are members of a six membered carbo or heterocyclic aromatic ring,  
 67 wherein the heterocyclic ring contains 1-6 heteroatom(s) selected from the group  
 68 consisting of C, N and a combination thereof;
- 69 b) A, G, K, J, E may each independently be unsubstituted or substituted with hydrogen,  
 70 halogen, hydroxyl, -CN, COR<sub>2</sub>, --CONR<sub>2</sub> R<sub>3</sub>, --S(O)<sub>n</sub> R<sub>2</sub>, --OPO(OR<sub>2</sub>)OR<sub>3</sub>, --  
 71 PO(OR<sub>3</sub>)R<sub>3</sub>, --OC(O)NR<sub>2</sub> R<sub>3</sub>, --COOR<sub>2</sub>, --CONR<sub>2</sub> R<sub>3</sub>, --SO<sub>3</sub>H, --NR<sub>2</sub> R<sub>3</sub>, --NR<sub>2</sub>  
 72 COR<sub>3</sub>, --NR<sub>3</sub> COOR<sub>3</sub>, --SO<sub>2</sub> NR<sub>2</sub> R<sub>3</sub>, --N(R<sub>2</sub>)SO<sub>2</sub> R<sub>3</sub>, --NR<sub>2</sub> CONR<sub>2</sub> R<sub>2</sub>, --SO<sub>2</sub>  
 73 NHCOR<sub>2</sub>, --CONHSO<sub>2</sub> R<sub>2</sub>, --SO<sub>2</sub> NHCN, --OR<sub>1</sub>, C<sub>1</sub>-C<sub>6</sub> straight or branched chain  
 74 alkyl or alkenyl, or C<sub>1</sub>-C<sub>6</sub> branched or straight chain alkyl or alkenyl which is  
 75 substituted with one or more halogen, hydroxyl, amino, carboxy, carboxamide,  
 76 nitrile, nitro, alkoxy, trifluoromethyl, sulfur, sulfonate, phosphonate, phosphate, Ar<sup>1</sup>,  
 77 or N<sub>3</sub>;
- 78 c) R<sub>1</sub> is CN, COR<sub>2</sub>, --CONR<sub>2</sub> R<sub>3</sub>, --S(O)<sub>n</sub> R<sub>2</sub>, --OPO(OR<sub>2</sub>)OR<sub>3</sub>, --PO(OR<sub>3</sub>)R<sub>3</sub>, --  
 79 OC(O)NR<sub>2</sub> R<sub>3</sub>, --COOR<sub>2</sub>, --CONR<sub>2</sub> R<sub>3</sub>, --SO<sub>3</sub>H, --NR<sub>2</sub> R<sub>3</sub>, --NR<sub>2</sub> COR<sub>3</sub>, --NR<sub>3</sub>  
 80 COOR<sub>3</sub>, --SO<sub>2</sub> NR<sub>2</sub> R<sub>3</sub>, --N(R<sub>2</sub>)SO<sub>2</sub> R<sub>3</sub>, --NR<sub>2</sub> CONR<sub>2</sub> R<sub>2</sub>, --SO<sub>2</sub> NHCOR<sub>2</sub>, --  
 81 CONHSO<sub>2</sub> R<sub>2</sub>, --SO<sub>2</sub> NHCN, SCN, COCO<sub>2</sub>H, C<sub>1</sub>-C<sub>6</sub> straight or branched chain  
 82 alkyl or alkenyl, or C<sub>1</sub>-C<sub>6</sub> branched or straight chain alkyl or alkenyl which is  
 83 substituted with one or more halogen, hydroxyl, amino, carboxy, carboxamide,  
 84 nitrile, nitro, alkoxy, trifluoromethyl, sulfur, sulfonate, phosphonate, phosphate, Ar<sup>1</sup>,  
 85 or N<sub>3</sub>;
- 86 d) W is N, (CH<sub>2</sub>)<sub>x</sub>, or -NCH<sub>2</sub>;
- 87 e) x=0-4;
- 88 f) n=0-2;

- g)  $R_2$  and  $R_3$  are each, independently, hydrogen,  $C_1$ - $C_6$  straight or branched chain alkyl or alkenyl, or  $C_1$ - $C_6$  branched or straight chain alkyl or alkenyl which is substituted with one or more halogen, hydroxyl, amino, carboxy, carboxamide, nitrile, nitro, alkoxy, trifluoromethyl, sulfur, sulfonate, phosphonate, phosphate,  $Ar^1$ , or  $N_3$ ; and
- h)  $Ar^1$  is a mono-, bi- or tricyclic, carbo- or heterocyclic ring, wherein the ring is either unsubstituted or substituted in one to three position(s) with halo, hydroxyl, nitro, trifluoromethyl,  $C_1$ - $C_6$  straight or branched chain alkyl or alkenyl,  $C_1$ - $C_4$  alkoxy,  $C_1$ - $C_4$  alkenyloxy, phenoxy, benzyloxy, amino, or a combination thereof; wherein the individual ring sizes are 5-6 members; and wherein the heterocyclic ring contains 1-6 heteroatom(s) selected from the group consisting of O, N, S, and a combination thereof.

3. The method of claim 1, wherein said test compound is selected from the group consisting of
- (1) a compound represented by the structure comprising:

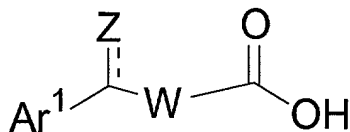


wherein:

- a)  $W = (CH_2)_n$ ;
- b)  $n = 0-5$ ;
- c)  $Z$  is O or hydroxyl;
- d)  $Y = H, Ar^1, R_4(CH_2)_x, R_1S(CH_2)_x, R_1SO(CH_2)_x, R_1SO_2(CH_2)_x, R_1SO_3(CH_2)_x, HNR_1SO_2(CH_2)_x, R_1R_2N(CH_2)_x, R_1O(CH_2)_x, CF_3$ , or  $OH$ ;
- e)  $x = 0-6$ ;
- f)  $R_1, R_2$  and  $R_3$  are each independently hydrogen,  $C_1$ - $C_6$  straight or branched chain alkyl or  $C_1$ - $C_6$  branched or straight chain alkyl substituted with one or more halogen, hydroxyl, amino, carboxy, carboxamide, nitrile, nitro, alkoxy, trifluoromethyl, sulfur, sulfonate, phosphonate, phosphate, or  $Ar^1$ ;

- g)  $R_4$  is halogen, CN,  $N_3$ ,  $C_1$ - $C_6$  straight or branched chain alkyl or  $C_1$ - $C_6$  branched or straight chain alkyl substituted with one or more halogen, hydroxyl, nitro, alkoxy, trifluoromethyl, sulfonate, phosphonate, phosphate,  $Ar^1$ ,  $--COR_1$ ,  $--COOR_1$ ,  $--CONR_1R_2$ , CN,  $--NR_1$ ,  $--NR_1R_2$ ,  $--SR_1$ ,  $--SO_2NHCN$ , or  $N_3$ ; and
- h)  $Ar^1$  is a mono-, bi- or tricyclic, carbo- or heterocyclic ring, wherein the ring is either unsubstituted or substituted in one to three position(s) with halo, hydroxyl, nitro, trifluoromethyl,  $C_1$ - $C_6$  straight or branched chain alkyl or alkenyl,  $C_1$ - $C_4$  alkoxy,  $C_1$ - $C_4$  alkenyloxy, phenoxy, benzyloxy, amino, or a combination thereof; wherein the individual ring sizes are 5-6 members; and wherein the heterocyclic ring contains 1-6 heteroatom(s) selected from the group consisting of O, N, S, and a combination thereof; and

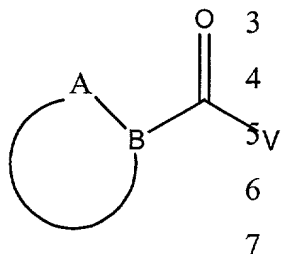
(2) a compound represented by the structure comprising:



wherein:

- a) Y is  $Ar^1$ ;
- b) Z is a carbonyl or hydroxyl;
- c) W is  $(CH_2)_n$  wherein  $(n = 0, 1, \text{ or } 2)$  and  $R_3 = H$ ; and
- d)  $Ar^1$  is a mono-, bi- or tricyclic, carbo- or heterocyclic ring, wherein the ring is either unsubstituted or substituted in one to three position(s) with halo, hydroxyl, nitro, trifluoromethyl,  $C_1$ - $C_6$  straight or branched chain alkyl or alkenyl,  $C_1$ - $C_4$  alkoxy,  $C_1$ - $C_4$  alkenyloxy, phenoxy, benzyloxy, amino, or a combination thereof; wherein the individual ring sizes are 5-6 members; and wherein the heterocyclic ring contains 1-6 heteroatom(s) selected from the group consisting of O, N, S, and a combination thereof.

- 1 4. The method of claim 1, wherein said test compound is represented by the structure  
 2 comprising:

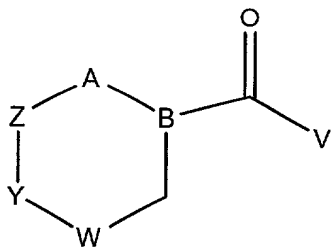


8 wherein:

- 9 a) A and B taken together, form a 5-8 membered saturated or partially unsaturated  
 10 heterocyclic ring containing at least one additional O, S, SO, SO<sub>2</sub>, NH, or NR<sup>1</sup>  
 11 heteroatom in any chemically stable oxidation state;  
 12 b) V is O, OR<sub>1</sub>, NR<sub>2</sub>, NR<sub>1</sub>R<sub>2</sub>, CHR<sub>1</sub>R<sub>2</sub>, CH<sub>2</sub>R<sub>3</sub>, CHR<sub>3</sub>R<sub>4</sub>, or CH<sub>2</sub>N<sub>3</sub>;  
 13 c) R<sub>1</sub> and R<sub>2</sub> are independently hydrogen, C<sub>1</sub>-C<sub>6</sub> straight or branched chain alkyl or C<sub>1</sub>-  
 14 C<sub>6</sub> branched or straight chain alkyl substituted with one or more halogen, hydroxyl,  
 15 amino, carboxy, carboxamide, nitro, alkoxy, trifluoromethyl, sulfur, sulfonate,  
 16 phosphonate, or Ar<sup>1</sup>;  
 17 d) R<sub>3</sub> and R<sub>4</sub> are either halogen, C<sub>1</sub>-C<sub>6</sub> straight or branched chain alkyl or C<sub>1</sub>-C<sub>6</sub>  
 18 branched or straight chain alkyl substituted with one or more hydroxyl, amino,  
 19 carboxy, carboxamide, nitro, alkoxy, trifluoromethyl, sulfur, sulfonate,  
 20 phosphonate, Ar<sup>1</sup>, --OC(O)R<sub>1</sub>, --COOR<sub>1</sub>, --CONR<sub>1</sub>R<sub>2</sub>, CN, NR<sub>1</sub>, NR<sub>1</sub>R<sub>2</sub>, SR<sub>1</sub>,  
 21 SO<sub>2</sub>NHCN, or N<sub>3</sub>; and  
 22 e) Ar<sup>1</sup> is a mono-, bi- or tricyclic, carbo- or heterocyclic ring, wherein the ring is either  
 23 unsubstituted or substituted in one to three position(s) with halo, hydroxyl, nitro,  
 24 trifluoromethyl, C<sub>1</sub>-C<sub>6</sub> straight or branched chain alkyl or alkenyl, C<sub>1</sub>-C<sub>4</sub> alkoxy, C<sub>1</sub>-  
 25 C<sub>4</sub> alkenyloxy, phenoxy, benzyloxy, amino, or a combination thereof; wherein the  
 26 individual ring sizes are 5-6 members; and wherein the heterocyclic ring contains 1-  
 27 6 heteroatom(s) selected from the group consisting of O, N, S, and a combination  
 28 thereof.

1 5. The method of claim 4, wherein said compound is cystathionine ketimine or cyclothionine

1 6. The method of claim 1, wherein said test compound is represented by the structure  
2 comprising:



3 wherein:

- 4 a) W-Y-Z-A-B comprise a six membered saturated or partially saturated carbocyclic or
- 5 heterocyclic ring, wherein the heterocyclic ring contains heteroatom(s) selected from
- 6 the group consisting of O, N, S, and any combination thereof;
- 7 b) B is either C, CH or N;
- 8 c) A, W, Y, Z are each independently CH<sub>2</sub>, CHR<sub>3</sub>, CR<sub>3</sub>R<sub>4</sub>, O, S, SO, SO<sub>2</sub>, NH, NR<sub>1</sub>,
- 9 NR<sub>1</sub>R<sub>2</sub>, or C=O;
- 10 d) V is O, OR<sub>1</sub>, NR<sub>2</sub>, NR<sub>1</sub>R<sub>2</sub>, CHR<sub>1</sub>R<sub>2</sub>, CH<sub>2</sub>R<sub>3</sub>, CHR<sub>3</sub>R<sub>3</sub>, or CH<sub>2</sub>N<sub>3</sub>;
- 11 e) R<sub>1</sub> and R<sub>2</sub> are independently hydrogen, C<sub>1</sub>-C<sub>6</sub> straight or branched chain alkyl or C<sub>1</sub>-
- 12 C<sub>6</sub> branched or straight chain alkyl substituted with one or more, halogen, hydroxyl,
- 13 amino, carboxy, carboxamide, nitrile, nitro, alkoxy, trifluoromethyl, sulfur,
- 14 sulfonate, phosphonate, phosphate, or Ar<sup>1</sup>;
- 15 f) R<sub>3</sub> and R<sub>4</sub> are each independently halogen, --OC(O)R<sub>1</sub>, --COOR<sub>1</sub>, --CONR<sub>1</sub>R<sub>2</sub>, CN,
- 16 --NR<sub>1</sub>, --NR<sub>1</sub>R<sub>2</sub>, --SR<sub>1</sub>, --SO<sub>2</sub>NHCN, N<sub>3</sub>, C<sub>1</sub>-C<sub>6</sub> straight or branched chain alkyl or
- 17 C<sub>1</sub>-C<sub>6</sub> branched or straight chain alkyl substituted with one or more halogen,
- 18 hydroxyl, nitro, alkoxy, trifluoromethyl, sulfonate, phosphonate, Ar<sup>1</sup>, --OC(O)R<sub>1</sub>, --
- 19 COOR<sub>1</sub>, --CONR<sub>1</sub>R<sub>2</sub>, CN, --NR<sub>1</sub>, --NR<sub>1</sub>R<sub>2</sub>, --SR<sub>1</sub>, --SO<sub>2</sub>NHCN, or N<sub>3</sub>; and
- 20 g) Ar<sup>1</sup> is a mono-, bi- or tricyclic, carbo- or heterocyclic ring, wherein the ring is either
- 21 unsubstituted or substituted in one to three position(s) with halo, hydroxyl, nitro,
- 22 trifluoromethyl, C<sub>1</sub>-C<sub>6</sub> straight or branched chain alkyl or alkenyl, C<sub>1</sub>-C<sub>4</sub> alkoxy, C<sub>1</sub>
- 23 -C<sub>4</sub> alkenyloxy, phenoxy, benzyloxy, amino, or a combination thereof; wherein the
- 24

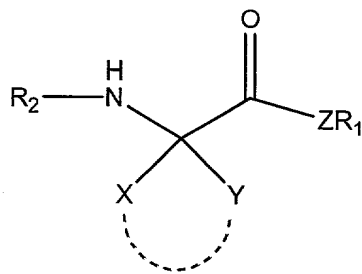


individual ring sizes are 5-6 members; and wherein the heterocyclic ring contains 1-6 heteroatom(s) selected from the group consisting of O, N, S, and any combination thereof.

7. The method of claim 6, wherein said compound is selected from the group consisting of: Aminoethylcysteine-ketimine (2H-1,4-thiazine-5,6-dihydro-3-carboxylic acid), Thiomorpholine-2-carboxylic acid, Lanthionine ketimine, and 1,4-Thiomorpholine-3,5-dicarboxylic acid.

8. The method of claim 1, wherein said test compound is selected from the group consisting of:

(1) a compound represented by the structure comprising:



wherein:

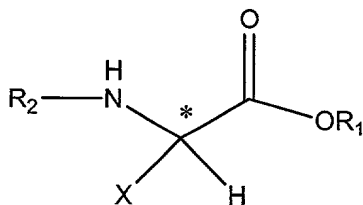
- a) Z is O or NH;
- b)  $R^1$  is  $(C_1-C_6)$  alkyl,  $Ar^1$ , or  $(C_1-C_4)$  alkoxy carbonylmethyl;
- c) X, Y, independently of one another, are H,  $Ar^1$ ,  $(C_1-C_6)$  alkyl (which can be interrupted or substituted by heteroatoms, such as N, P, O, S or Si, it being possible for the heteroatoms themselves to be substituted by  $(C_1-C_3)$  alkyl once or several times),  $(C_2-C_6)$  alkenyl,  $(C_1-C_6)$  haloalkyl, or halogen. When X and Y are each carbon they may be covalently joined to form a saturated or partially unsaturated carbocyclic compound of 3-8 members consisting independently of C, N, O, and S, further wherein ring members may themselves be unsubstituted or substituted with halo, hydroxyl, carboxy, nitro, trifluoromethyl,  $C_1-C_6$  straight or branched chain

alkyl or alkenyl, C<sub>1</sub>-C<sub>4</sub> alkoxy, C<sub>1</sub>-C<sub>4</sub> alkenyloxy, phenoxy, benzyloxy, amino, substituted alkyl, Ar<sup>1</sup>, or a combination thereof;

d) R<sub>2</sub> is H, alkyl, Ar<sup>1</sup>, or O substituted alkyl; and

e) Ar<sup>1</sup> is a mono-, bi- or tricyclic, carbo- or heterocyclic ring, wherein the ring is either unsubstituted or substituted in one to three position(s) with halo, hydroxyl, nitro, trifluoromethyl, C<sub>1</sub>-C<sub>6</sub> straight or branched chain alkyl or alkenyl, C<sub>1</sub>-C<sub>4</sub> alkoxy, C<sub>1</sub>-C<sub>4</sub> alkenyloxy, phenoxy, benzyloxy, amino, or a combination thereof; wherein the individual ring sizes are 3-7 members; and wherein the heterocyclic ring contains 1-6 heteroatom(s) selected from the group consisting of O, N, S, and any combination thereof;

(2) a compound represented by the structure comprising:



wherein:

a) \* = asymmetric center and

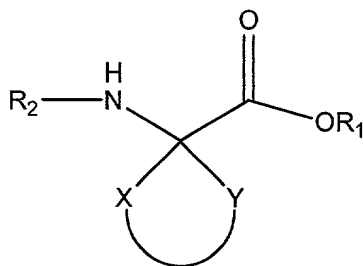
b) R<sup>1</sup> = (C<sub>1</sub> - C<sub>6</sub>) alkyl, Ar<sup>1</sup>, (C<sub>1</sub> - C<sub>4</sub>) alkoxycarbonylmethyl and

c) X is H, (C<sub>1</sub> - C<sub>6</sub>) alkyl (which can be interrupted or substituted by heteroatoms, such as N, P, O, S or Si, it being possible for the heteroatoms themselves to be substituted by (C<sub>1</sub> - C<sub>3</sub>) alkyl once or several times), (C<sub>2</sub>-C<sub>6</sub>) alkenyl, (C<sub>1</sub> - C<sub>6</sub>) haloalkyl, halogen, or Ar<sup>1</sup>;

d) R<sub>2</sub> is H, alkyl, Ar<sup>1</sup>, or O substituted alkyl;

e) Ar<sup>1</sup> is a mono-, bi- or tricyclic, carbo- or heterocyclic ring, wherein the ring is either unsubstituted or substituted in one to three position(s) with halo, hydroxyl, nitro, trifluoromethyl, C<sub>1</sub> - C<sub>6</sub> straight or branched chain alkyl or alkenyl, C<sub>1</sub>-C<sub>4</sub> alkoxy, C<sub>1</sub>-C<sub>4</sub> alkenyloxy, phenoxy, benzyloxy, amino, or a combination thereof; wherein the individual ring sizes are 3-7 members; and wherein the heterocyclic ring contains 1-6 heteroatom(s) selected from the group consisting of O, N, S, and any combination thereof;

43 (3) a compound represented by the structure comprising:



44

45 wherein:

46 a) X and Y are each carbon;

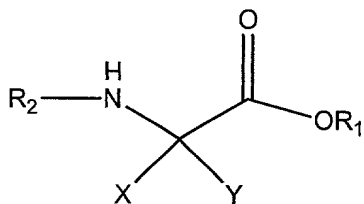
47 b) X and Y are connected by a saturated or partially saturated ring of 3-8 carbons and  
 48 such a ring may itself be substituted in one to five position(s) with halo, hydroxyl,  
 49 carboxy, amino, nitro, cyano, trifluoromethyl, C<sub>1</sub>-C<sub>6</sub> straight or branched chain alkyl  
 50 or alkenyl, C<sub>1</sub>-C<sub>4</sub> alkoxy, C<sub>1</sub>-C<sub>4</sub> alkenyloxy, or substituted alkyl groups;

51 c) R<sup>1</sup> is (C<sub>1</sub>-C<sub>6</sub>) alkyl, Ar<sup>1</sup>, or (C<sub>1</sub>-C<sub>4</sub>) alkoxycarbonylmethyl;

52 d) R<sub>2</sub> is H, alkyl, Ar<sup>1</sup>, or O substituted alkyl; and

53 e) Ar<sup>1</sup> is a mono-, bi- or tricyclic, carbo- or heterocyclic ring, wherein the ring is either  
 54 unsubstituted or substituted in one to three position(s) with halo, hydroxyl, nitro,  
 55 trifluoromethyl, C<sub>1</sub>-C<sub>6</sub> straight or branched chain alkyl or alkenyl, C<sub>1</sub>-C<sub>4</sub> alkoxy, C<sub>1</sub>-  
 56 -C<sub>4</sub> alkenyloxy, phenoxy, benzyloxy, amino, or a combination thereof; wherein the  
 57 individual ring sizes are 3-7 members; and wherein the heterocyclic ring contains 1-  
 58 6 heteroatom(s) selected from the group consisting of O, N, S, and any combination  
 59 thereof; and

60 (4) a compound represented by the structure comprising:



61

62 wherein:

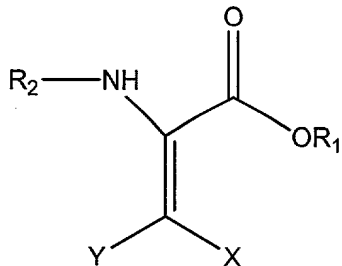
63 a) X, Y, independently of one another, are H, Ar<sup>1</sup>, (C<sub>1</sub>-C<sub>6</sub>) alkyl (which can be  
 64 interrupted or substituted by heteroatoms, such as N, P, O, S or Si, it being possible

for the heteroatoms themselves to be substituted by (C<sub>1</sub>-C<sub>3</sub>) alkyl once or several times), (C<sub>2</sub>-C<sub>6</sub>) alkenyl, (C<sub>1</sub>-C<sub>6</sub>) haloalkyl, or halogen such as naphthyl or phenyl;

b) R<sub>2</sub> is H, alkyl, Ar<sup>1</sup>, or O substituted alkyl; and

c) Ar<sup>1</sup> is a mono-, bi- or tricyclic, carbo- or heterocyclic ring, wherein the ring is either unsubstituted or substituted in one to three position(s) with halo, hydroxyl, nitro, trifluoromethyl, C<sub>1</sub>-C<sub>6</sub> straight or branched chain alkyl or alkenyl, C<sub>1</sub>-C<sub>4</sub> alkoxy, C<sub>1</sub>-C<sub>4</sub> alkenyloxy, phenoxy, benzyloxy, amino, or a combination thereof; wherein the individual ring sizes are 3-7 members; and wherein the heterocyclic ring contains 1-6 heteroatom(s) selected from the group consisting of O, N, S, and any combination thereof.

9. The method of claim 1, wherein said test compound is represented by the structure comprising:



wherein:

a) R<sup>1</sup> is (C<sub>1</sub>-C<sub>6</sub>) alkyl, Ar<sup>1</sup>, or (C<sub>1</sub>-C<sub>4</sub>) alkoxycarbonylmethyl;

b) R<sub>2</sub> is H, alkyl, Ar<sup>1</sup>, or O substituted alkyl;

c) Y is H, Ar<sup>1</sup>, (C<sub>1</sub>-C<sub>6</sub>) alkyl (which can be interrupted or substituted by heteroatoms, such as N, P, O, S or Si, it being possible for the heteroatoms themselves to be substituted by (C<sub>1</sub>-C<sub>3</sub>) alkyl once or several times), (C<sub>2</sub>-C<sub>6</sub>) alkenyl, (C<sub>1</sub>-C<sub>6</sub>) haloalkyl, or halogen; and

d) X is alkyl or phenyl.

1 10. A method of diagnosing, detecting a predisposition to or susceptibility to schizophrenia,  
2 depression or bipolar disorder in a subject, comprising  
3 (a) obtaining a nucleic acid sample from said subject; and  
4 (b) determining the identity of a nucleotide at a DAO-related polymorphism, or the  
5 complement thereof in said biological sample.

1 11. A isolated or purified nucleic acid encoding a DAO polypeptide or DAO polypeptide  
2 selected from the group consisting of:  
3 (i) a nucleic acid molecule encoding a polypeptide comprising an amino acid sequence  
4 selected from the group of sequences consisting of SEQ ID NOS 8 to 10; and  
5 (ii) a nucleic acid molecule comprising a nucleic acid sequence selected from the group  
6 of sequences consisting of SEQ ID NOS 1 to 6, or a sequence complementary  
7 thereto;  
8 (iii) a purified or isolated DAO polypeptide comprising an amino acid sequence selected  
9 from the group of sequences consisting of SEQ ID NOS 8 to 10.  
10 (iv) a polypeptide encoded by a nucleic acid molecule comprising a nucleic acid  
11 sequence selected from the group of sequences consisting of SEQ ID NOS 1 to 6, or  
12 a sequence complementary thereto.

1 12. The method of claim 1, wherein said test compound (i) binds to a DAO or DDO  
2 polypeptide, or (ii) inhibits the activity of a DAO or DDO polypeptide.

1 13. A method of identifying a candidate molecule for the treatment of a CNS disorder, said  
2 method comprising:

- 3 (a) contacting a DAO or DDO polypeptide or a biologically active fragment thereof  
4 with a test compound;  
5 (b) determining whether said compound (i) binds to said polypeptide, or (ii) inhibits the  
6 activity of said polypeptide; and  
7 (c) if said compound binds to said polypeptide or inhibits said polypeptide,  
8 administering said compound to an animal model of schizophrenia, depression or  
9 bipolar disorder,

10 wherein a determination that said compound ameliorates a characteristic representative of CNS  
11 disorder in said animal model indicates that said compound is a candidate molecule for the  
12 treatment of a CNS disorder.